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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/015,896	12/17/2001	Yong Sung Ham	49128-5033	7304

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WASHINGTON, DC 20004

EXAMINER
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LAO, LUN YI

ART UNIT	PAPER NUMBER
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2673

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DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
10/015,896

Applicant(s)  
Ham

Examiner  
Lun-yi Lao

Art Unit  
2673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some\* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2 6) ☐ Other:

Art Unit: 2673

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Matsumura et al(US 2002/0033813) in view of Sato(5,956,006).

As to claims 1-4 and 8-9, Matsumura et al teach an LCD display apparatus for increasing a data voltage of a current frame if the data voltage of the current frame is greater than the previous frame, and decreasing the data voltage of the current frame if the data voltage of the current frame is less than the previous frame(see figures 4-6; column 2, paragraph 0017; column 5, paragraph 0063-0064; column 7, paragraph 0080 and column 8, claim 2).

Matsumura et al fail to disclose a color LCD display.

Sato teach an color LCD display with display data with most significant bit and lest significant bit(see figures 1, 12, 13, 16; abstract and column 10, lines 61-64). It would have been obvious to have modified Matsumura et al with the teaching of Sato, so as to provide a color LCD display to a user.

Art Unit: 2673

As to claims 3-4, Matsumura et al teach an LCD display apparatus for increasing data voltage of the current frame is proportionally increased with a difference between the current data voltage and the previous data voltage(the difference output from subtractor(14) multiplies a coefficient(see figures 4, 5; column 6, paragraph 0067 and paragraph 0071).

As to claims 8 and 14, Matsumura et al teach an LCD display apparatus having a loop-up table(5)(see figure 4 and column 5, paragraph 0063).

As to claim 9, Matsumura et al teach an LCD display apparatus having a liquid crystal display panel(20); a timing controller(23); a data driver(22) and a gate driver(21)(see figure 6 and column 1, paragraph 0002).

3. Claims 5-7, 10-11 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Matsumura et al(US 2002/0033813) in view of Sato(5,956,006) and Kuga(5,828,367).

As to claims 5-7, 10-11 and 13-14, Matsumura et al teach an LCD display apparatus for generating the current image signal if the data voltage of the current frame is the same as the previous frame(see figures 4-5; column 7, paragraph 0080 and column 8, claim 2).

Matsumura et al fail to disclose display apparatus for decreasing a data voltage of a current frame if the data voltage of the current frame is the same as the previous frame.

Kuga teach an LCD display apparatus for decreasing a data voltage of a current frame if the data voltage of the current frame is the same as the previous frame(see figures 4-5; column 2, lines 33-39 and column 5, lines 17-25). It would have been obvious to have modified Matsumura



Art Unit: 2673

et al as modified with the teaching of Kuga, so as to save power in an LCD display(see abstract and column 2, lines 33-39).

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Matsumura et al(US 2002/0033813) in view of Sato(5,956,006), Kuga(5,828,367) and Kasahara et al(6,414,657).

Matsumura et al fail to disclose a comparator having an exclusive logic.

Kasahara et al teach a comparator(62b) having an exclusive-OR operation(see figure 21 and column 27, lines 37-52). It would have been obvious to have modified Matsumura et al as modified with the teaching of Kasahara et al, since Matsumura et al have a comparator(14)(see figures 4-5 and column 6, paragraph 0067) and an exclusive-OR logic function could determine whether two input data are different or same.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sakashita(6,501,451) teaches an LCD display having a delay element(203); a comparison circuit(302); a look-up table(205) and adder/subtractor(206)(see figures 2-3).

Furuhashi et al(6,556,180) teach an LCD display having a delay element(102); a comparison circuit(106) and adder/subtractor(108)



Application/Control Number: 10/015,896

Page 5

Art Unit: 2673

Yamazaki et al(5,920,300) teaches an LCD display having an adder(403).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lun-yi, Lao whose telephone number is (703) 305-4873.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached at (703) 305-4938.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

September 25, 2003

**Lun-yi Lao**

**Primary Examiner**